Conclusion: HDR-BT seems to be a good alternative for treatment of epitheliomas in special locations, above all in elderly patients with comorbidities that preclude surgery. Its ability to treat a wide area with minimal alteration of normal tissues allows a high probability of cure with excellent cosmetic results and without affecting functionality.
We can conclude that HDR-BT could be a valid alternative to surgery with acceptable acute toxicity, good early local control and exceptional cosmetic outcomes in skin lesions.

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Compare EBRT and brachytherapy in the treatment children's vaginal rhabdomyosarcoma.
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Purpose or Objective: Rhabdomyosarcoma of the vagina is very rare disease, mainly girls were 1-3 years, only a few patients were 13-15 years old. Early studies have shown the advantage of intracavitary radiation therapy over surgical treatment and EBRT. There are new methods of planning EBRT from CRT moved to VMAT and IMRT. The emergence of new techniques in the EBRT and brachytherapy inspired us to the evaluation of methods of treatment children's vaginal rhabdomyosarcoma.

Material and Methods: From 1980 till 2015 38 patients received intracavitary brachytherapy with source Co-60 and Ir-192. In our cancer center were made special applicators of different designs. The main treatments were applicators for direct 8 mm diameter and a length of about 6-7 cm. Were specially made Co-60 tube source (LDR). Children were immobilized for several days. The active length was 4-5 cm.
Since the 90s we switched to using stepping source Ir-192 HDR. Normalisation point changed from 5 mm to 2 mm from the surface of applicator.This made it possible to irradiate the entire vagina.
Planning is optimized for the creation of uniform dose distribution throughout the vagina. Accordingly, it was necessary to calculate dose distribution for these cases. For calculations were chosen CT and MRI and patient anatomy was extended, contoured target and OAR's. The calculation of CRT / IMRT / VMAT / Brachy. CTV was 6.5 cm3.
Unlike cervical cancer, in OAR's we added the urethra, which is located close to vagina, and which dose close to 100%. We have calculated % dose to the rectum, bladder, urethra and ovaries. For EBRT, we calculated the mean dose to OAR's, Brachytherapy for rectum and bladder, we calculated dose to 1 cm3, and the entire volume of urethra and ovaries.

Results: In both cases (EBRT and Brachy) ovaries was about 2% (2.0% -2.3%) of normalisation dose. However, it is worth considering that brachytherapy is given high dose per fraction, so radiobiological dose above.
CRT / IMRT / VMAT / Brachy:
Rectum: 37.7 / 26.6 / 29.9 / 37.2 %
Bladder: 58.7 / 39.6 / 37.1 / 30.8 %
Uretra: 99.0 / 99.2 / 97.2 / 50.2 %

Conclusion: Although improvement in EBRT (from CRT to IMRT and VMAT) and decrease in dose to OAR's, brachytherapy maintains its position in the treatment of this localization. When less integral dose brachytherapy and dose on OAR's (not whole body is irradiated, but only part of it), which significantly reduces late effects. In modern time, we should pay attention to other radionuclides, which can give uniform dose distribution (example Yb-169).

Electronic Poster: Radiobiology track: Molecular targeted agents and radiotherapy

EP-2023
Radiation resistance induced immunity evasion by evoking PD-L1 expression
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Purpose or Objective: To characterize PD-L1 expression in non-small-cell lung cancer (NSCLC) cell lines, and explore the relationship between immunology escaping and tumor cell proliferlation and apoptosis with receiving radiotherapy.

Material and Methods: Evaluating the PD-L1 protein and CD8+ T cells with immunohistochemistry in tumor tissue from NSCLC patients. In vitro assay, to detect the expression of PD-L1 in different NSCLC cell lines after conventional and hypofractionated radiation therapy by westernbloting and study the difference between A549 and radiation resistance A549 cell line by flow cytometry and westernbloting. To analysis PI3K/Akt and stat3 proliferation pathway and Bcl2 family apoptosis signaling pathway in A549 radiation resistance cell by westernbloting. Small interfering RNA (siRNA) was used to A549 radiation resistance cell, and then to observe the difference in PI3K/Akt and stat3 pathway. As for in vivo study, immunohistochemistry was used to detect the relationship between the expression of PD-L1 and NF-KB protein in control group, anti-PD-L1 group, radiation group and radiation plus anti-PD-L1 group.

Results: We found that patients whose tumor expression the higher PD-L1 protein, who had the more radiation resistance and had less CD8+ T cell around tumor microenvironment. PD-L1 protein improved obviously in NSCLC cell lines after receiving conventional radiation, but there is not the same tendency after hypofractionated radiation. We found that A549 radiation resistance cell had activation in PI3K/Akt and stat3 pathway and its' NF-KB protein would be up-regulation. When the A549 acquired radiation resistance, it would be apoptotic less. We observed the activation of the anti-apoptosis protein bcl2 and the inhibition of the pro-apoptosis protein bim in A549 radiation resistance cell. After siRNA interfering to this cell, it's PD-L1 protein decreased. A549 radiation resistance cell came to be apoptosic. While it's pAkt, pstat3 and NF-KB didn't change.

Conclusion: Conventional radiation would be easy to induce radiation resistance by overexpressing the PD-L1. When the lung cancer cell express PD-L1 more, the tumor would escape from CD8+ T cell. NF-KB protein is the key to up-regulation PD-L1. When PD-L1 overexpression, lung cancer would be apoptosis less and immunity escaping. SiRNA interfering PD-L1 can eliminate the radiation resistance of the A549 cell line. It provide the evidence for the combination of the anti-PD-L1 drug and radiation therapy in clinic.

EP-2024
Optimising hyperthermia induced radiosensitisaion for treating HPV+ cervical tumours
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